ENVIRONMENTAL MOLECULAR SCIENCE INSTITUTES (EMSI) *and* COLLABORATIVE RESEARCH ACTIVITIES IN ENVIRONMENTAL MOLECULAR SCIENCE (CRAEMS)

Program Announcement

NSF 00-68

DIRECTORATE FOR MATHEMATICAL AND
PHYSICAL SCIENCES
DIVISION OF CHEMISTRY

DEADLINE DATE:

LETTER OF INTENT DUE APRIL 10, 2000

RESEARCH PROPOSALS - JUNE 8, 2000

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SUMMARY OF PROGRAM REQUIREMENTS

GENERAL INFORMATION

Program Name: **Environmental Molecular Science Institutes (EMSI); Collaborative Research Activities in Environmental Molecular Science (CRAEMS)**

Short Description/Synopsis of Program:

This program is aimed at increasing fundamental understanding of natural processes and processes resulting from human activities in the environment at the molecular level. This program will support cohesive, interdisciplinary group efforts by universities in partnership with industry in basic research on fundamental issues that underpin the amelioration of environmental problems caused by societal activities that are energy- and pollution-intensive. Projects are expected to advance the discipline of chemistry and related molecular sciences, increase understanding of environmental systems, serve as models for excellence in collaborative interdisciplinary research, and contribute ultimately to beneficial technologies and processes. Specifically, this competition will support Environmental Molecular Science Institutes (EMSI) and Collaborative Research Activities in Environmental Molecular Science (CRAEMS). A CRAEMS award funds groups of 3 – 5 investigators with complementary research interests and creates broad educational experiences for students. EMSIs are appropriate for a larger number of investigators, require an effective management structure, and include a variety of educational and outreach activities.

Cognizant Program Officer: **Dr. Margaret A. Cavanaugh, Program Director, Room 1055, Division of Chemistry, telephone 703.306.1842, e-mail:** mcavanau@nsf.gov

Applicable Catalog of Federal Domestic Assistance (CFDA) No.: **47.049 — MPS**

ELIGIBILITY INFORMATION

- Limitation on the categories of organizations that are eligible to submit proposals:

U.S. institutions that are eligible for awards from the National Science Foundation, including colleges, universities, and other nonprofit research institutions such as botanical gardens, marine and freshwater institutes, and natural history museums may submit proposals. The NSF encourages collaborations with scientists at foreign institutions; however, primary support for any foreign participants/activities must be secured through their own national sources.

- Limitation on eligible topics:

NSF does not normally support technical assistance, pilot plant efforts, research requiring security classification, the development of products for commercial marketing or market research for a particular project or invention. Research with disease-related goals, including work on the etiology, diagnosis or treatment of physical or mental disease, abnormality, or malfunction in human beings or animals, is normally not supported. Animal models of such conditions or the development or testing of drugs or other procedures for their treatment also are not eligible for support. Research in bioengineering, with diagnosis or treatment related goals, however, that applies engineering principles to problems in biology and medicine while advancing engineering knowledge is eligible for support. Bioengineering research to aid persons with disabilities is also eligible.

Proposals that are unresponsive to the goals of this announcement will be returned without review. Proposals must have the potential to advance the chemical and molecular sciences and address environmental problems. Proposals that emphasize monitoring or use of known chemical methods will be considered inappropriate.

- Limitation on the number of proposals that may be submitted by an organization:

No institution may submit more than one Institute proposal and one Collaborative Research Activity proposal to this competition. Proposals already submitted to other NSF programs or other federal agencies are not eligible for consideration by this competition.

- Limitation on the number of proposals that may be submitted by a PI:

A Principal Investigator may submit only one proposal to this competition and may only collaborate on one other proposal as a Co-Principal Investigator.

AWARD INFORMATION

- Type of award anticipated: **Continuing Grants**
- Number of awards anticipated in FY 00: **1-2 Institutes and 2-4 Collaborative Research Activities**
- Amount of funds available: **Approximately $4 million is anticipated to be available for this initiative in FY 2000. A total of $20 million is anticipated to be available over the five-year lifetime of these awards.**
- Anticipated date of award: **September 2000**

PROPOSAL PREPARATION & SUBMISSION INSTRUCTIONS

- **Proposal Preparation Instructions**
  - Letter of Intent requirements: **Required by April 10, 2000**
  - Preproposal requirements: **None**
  - Proposal preparation instructions: **Standard NSF Grant Proposal Guide instructions and additional instructions specific to this announcement**
- **Budgetary Information**
  - Cost sharing/matching requirements:

    A one-to-one match of instrumentation costs in excess of $80,000 is required. Any proposed cost sharing must be shown on line M on the proposal budget (NSF Form 1030).
  - Indirect cost (F&A) limitations: **None**
  - Other budgetary limitations: **Awards can be up to 5 years in duration. Annual budgets may be up to $1.5 million/year for Institutes and up to $600,000 per year for Collaborative Research Activities.**
- **FastLane Requirements**
  - FastLane proposal preparation requirements: **FastLane use required**
  - FastLane point of contact: **Paul Spyropoulos, 703-306-1022,** chefl@nsf.gov

- **Deadline/Target Dates**

  - Letter of Intent Deadline: **5:00 PM local time, April 10, 2000 (e-mail)**
  - Proposal Deadline: **5:00 PM local time, June 8, 2000 (FastLane)**

PROPOSAL REVIEW INFORMATION

- Merit Review Criteria: **Standard National Science Board approved criteria and supplementary criteria specific to this announcement**

AWARD ADMINISTRATION INFORMATION

- Grant Award Conditions: **GC-1 or FDP III**

- Special grant conditions anticipated: **None anticipated**

- Special reporting requirements anticipated: **All successful PIs are required to attend periodic (approximately every 2 years, during the tenure of the award) meetings of awardees or workshops at dates and places to be specified by NSF. Institutes should plan for a formal site visit by NSF at the midpoint of an award.**

I. INTRODUCTION

In 1998, the National Science Foundation (NSF) Directorate for Mathematical and Physical Sciences and U. S. Department of Energy (DOE) Office of Science (SC), formerly Office of Energy Research, sponsored a competition for support of Environmental Molecular Science Institutes (EMSI) aimed at increasing fundamental understanding of natural processes and processes resulting from human activities in the environment at the molecular level. These institutes were intended to encourage cohesive, interdisciplinary, university-industry group efforts in basic research on fundamental issues that underpin the amelioration of environmental problems caused by societal activities that are energy- and pollution-intensive. Five-year awards were made to three institutes. This announcement describes a continuation of that program.

This funding opportunity will establish one or two additional Environmental Molecular Science Institutes as well as two to four smaller Collaborative Research Activities in Environmental Molecular Science (CRAEMS). Up to $4.0 million per year from NSF will be made available beginning in FY 2000, subject to availability of funds. NSF and DOE are collaborating in this effort in order to ensure that the strongest possible programs are supported with the limited funds available and to concentrate resources to realize measurable progress in focused research areas. NSF will consult with the DOE Division of Chemical Sciences, Geosciences & Biosciences during the review process. Subject to availability of funds, DOE may support specific activities within EMSIs or CRAEMS appropriate to the DOE Office of Science mission. Resources and costs that would be incurred by DOE national laboratories (facilities, equipment, personnel) should be discussed with the appropriate DOE program manager prior to submission of a proposal.

Chemistry, with its focus on the molecular level, plays a central role in addressing the needs for fundamental understanding and development of technology in environmental areas. Understanding environmental processes and consequences requires studying natural systems, rather than focusing exclusively on laboratory models. Natural systems and their complexity pose an enormous, perhaps the ultimate, challenge to chemists, and will provide them with varied and exciting new problems for years to come. In addition, the complexity of the underlying systems and processes often requires multi-disciplinary programs that bridge the interfaces between chemistry and other disciplines, including engineering, geology, biology, materials research, and physics. This challenge suggests the need for interdisciplinary efforts based in the chemical sciences as well as the need for broadening the education and training of future scientists and engineers.

Furthermore, the chemical sciences contribute to solving the major scientific and technological challenges of the 21st

century. Quality of life in the United States depends on the environmental impact of the production and use of energy and chemicals. Thus, it is imperative to develop better understanding of the environment and to develop new strategies for minimizing the negative environmental effects of using energy and producing and disposing of chemicals. Recent advances in techniques for the synthesis and characterization of chemicals and materials and for the molecular control of biological organisms make it possible, for the first time, to address this imperative.

Examples of appropriate topical areas are provided in the report of an NSF-DOE sponsored workshop on *Molecular Energy and Environmental Science* held in mid-1999. The report is posted on the web at http://easel.cqe.nwu.edu/iec/workshop.html. Among the areas are environmental impacts of energy production; benign chemical and materials synthesis and processing for pollution prevention; methods to improve or protect air and water quality; investigation of contaminant and nutrient speciation, sorption, transport, and bioavailability at solid earth interfaces; and integrated understanding of the response of a specific environment to chemical perturbations caused by human activities. In order to advance understanding of these areas, research is necessary on topics such as materials synthesis and nanoscience, metalloenzymes and metal chelators, interfacial science, corrosion and separations, catalysis and biocatalysis, alternative solvents, waste treatment, and supporting capabilities and technologies. The importance of collaborations in areas such as measurement science, simulation technology, and database development is also addressed in the workshop report.

II. PROGRAM DESCRIPTION

Two types of projects will be supported: **Environmental Molecular Science Institutes (EMSI)** and **Collaborative Research Activities in Environmental Molecular Science (CRAEMS).** Projects of both types should serve as national models and resources for excellence in collaborative environmental research and in dissemination of results for the solution or amelioration of environmental problems. To strengthen the probability that the proposed basic research focus will contribute in the future to improved technologies and processes, it is expected that proposals will include working collaborations with appropriate industries. Collaborations with scientists at national laboratories are encouraged, but should not be substitutes for industrial collaborations. Understanding the molecular behavior of complex, dynamic environmental systems is expected to require interdisciplinary approaches involving scientists from multiple departments and to provide an exciting educational environment.

EMSIs are intended for larger teams of faculty (6 or more) who target either broad areas of importance to the environment and energy or especially complex problems. Proposers are invited to take a fresh look at environmental challenges and to develop activities around a unified theme. EMSIs are expected to have substantial education and outreach components in addition to the research. Industrial partnerships are required. Each Institute must have a focused research theme and specific goals; the research should not be a collection of existing projects. The organization and management structure must be designed to meet these goals. Funding up to $1.5 million per year for five years is appropriate and could include a significant component of instrumentation resources and infrastructure support as part of the operating budget.

CRAEMS supports teams of 3-5 researchers with funding up to $600,000 per year for five years. Teams may consist entirely of university personnel, but the research may benefit substantially from active collaboration with national laboratory personnel and their facilities or collaborations with industry. Management and outreach are expected at the appropriate level, but do not need to be as extensive as for an EMSI. The project director must consider the responsibilities of team members, the organization necessary for efficient and coordinated acquisition of data and methodologies, and integration of education and research.

After expiration of the grant, successful EMSIs and CRAEMS will be eligible to compete for renewals in appropriate competitions.

III. ELIGIBILITY INFORMATION

Eligibility is limited to colleges, universities, and other not-for-profit institutions in the U.S. and its territories, as described in detail in the *Grant Proposal Guide* (NSF 00-2). Non-profit research institutions include botanical gardens, marine and freshwater institutes, and natural history museums. The NSF encourages collaborations with scientists at foreign institutions; however, primary support for any foreign participants/activities must be secured through their own national sources.

NSF does not normally support technical assistance, pilot plant efforts, research requiring security classification, the development of products for commercial marketing or market research for a particular project or invention. Research with disease-related goals, including work on the etiology, diagnosis or treatment of physical or mental disease, abnormality, or malfunction in human beings or animals, is normally not supported. Animal models of such conditions or the development or testing of drugs or other procedures for their treatment also are not eligible for support. Research in bioengineering, with diagnosis or treatment related goals, however, that applies engineering principles to problems in biology and medicine while advancing engineering knowledge is eligible for support. Bioengineering research to aid persons with disabilities is also eligible.

No institution may submit more than one Institute proposal and one Collaborative Research Activity proposal to this competition. Proposals already submitted to other NSF programs or other federal agencies are not eligible for consideration by this competition. A Principal Investigator may submit only one proposal to this competition and may only collaborate on one other proposal as a Co-Principal Investigator. When consortia of eligible individuals or institutions submit a proposal, a single principal investigator must be designated as the project director and a single institution must accept overall management responsibility. Collaboration or partnership with industry is required for an EMSI and strongly encouraged for a CRAEMS. Collaboration with researchers at government laboratories is encouraged. For this program, collaborating scientists associated with entities such as national laboratories, state agencies, and Federally Funded Research and Development Centers (FFRDC) must be supported by their own institution. However, it is appropriate for students supported through universities to work at an FFRDC or comparable site or for universities to fund research expenses incurred when scientists from such entities work at university sites. Federal employees may not receive salaries or in other ways augment their agency's appropriation through grants made by this program, and no funds for major equipment at FFRDCs are allowed. For foreign participants, the US university may provide funds under participant support costs for travel and per diem for visits to the US institution, as consistent with applicable international agreements. No US funds may go directly to foreign institutions.

Potential applicants are required to submit a Letter of Intent by e-mail by 5:00 PM local time, April 10, 2000. The letter is described in detail below. It should identify principal investigators, collaborators and format of the activity, and describe the main thrusts of the project. An institutional signature is not required.

Full proposals prepared in accordance with the *Grant Proposal Guide* and the instructions below must be received by **5:00 PM local time, June 8, 2000**. Additional information on format, budgetary requirements, FastLane submission, and review criteria is provided below. **To be considered, a proposal must contain a significant amount of molecular level research that advances chemical disciplines. Proposals that merely use chemical methods are topically inappropriate and will be returned without review.**

IV. AWARD INFORMATION

Under this announcement, proposals may be submitted for up to five years for any funding amount up to $1.5 million per year for Institutes and $600,000 per year for Collaborative Research Activities. Grants may be awarded in a variety of sizes and durations. NSF expects to fund approximately 1-2 Institutes and 2-4 Collaborative Group Activities depending on the quality of submissions and the availability of funds. It is anticipated that approximately $4 million will be available for this initiative in FY 2000. Anticipated date of awards: September 2000.

V. PROPOSAL PREPARATION & SUBMISSION INSTRUCTIONS

A. Letters of Intent

No full proposal will be accepted without prior receipt of a short electronic Letter of Intent. This message must be sent by e-mail on or before 5:00 PM local time, April 10, 2000, to mcavanau@nsf.gov. **Do not send hard copies; no original signatures are required.** The main purpose of the letter is to enable NSF to plan the review process by giving the Foundation an estimate of the number and topical breadth of proposals expected and the institutions involved. The message should be **no more than 400 words long** (approximately one page of single-spaced text) and should contain the following: (1) a general description of the proposal; (2) indication of whether the proposal is for an Institute or a Collaborative Research Activity; and (3) the identity of the investigators, institutions and facilities. An acknowledgement of receipt of the Letter of Intent will be e-mailed by April 25. Please note these letters are for planning purposes only. Proposal review and funding recommendations will be based on the full proposals.

B. Proposal Preparation Instructions

Proposals submitted in response to this program announcement should be prepared and submitted in accordance with the general guidelines contained in the *Grant Proposal Guide* (GPG), NSF 00-2. The complete text of the GPG (including electronic forms) is available electronically on the NSF Web site at: http://www.nsf.gov/. Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone 301.947.2722 or by e-mail from pubs@nsf.gov.

Proposers are reminded to identify the program announcement number (NSF 00-68) in the program announcement/solicitation block on the NSF Form 1207, "*Cover Sheet for Proposal to the National Science Foundation*." In the organizational unit block on NSF Form 1207, indicate "CHE - Projects." Compliance with this requirement is critical to determining the relevant proposal processing guidelines and program. Failure to submit this information may delay processing.

1. Proposal Format

Proposal Format for Institutes (EMSI)

This section broadly describes the nature and scope of an institute and is not intended to be prescriptive. Many approaches may be appropriate, including the traditional understanding of an institute at a specific physical location, as well as regional or more widely distributed institutes. Proposals should include information that defines the institute, describes the planning process, defines the mission and goals, describes how the desired goals will be achieved and how it will be determined that these goals have been accomplished. The proposing groups are expected to construct an appropriate organization and structure that will maximize the institute's effectiveness and impact.

The leadership of an institute should be provided by a small group, including a director and, if appropriate to the size of the institute, an associate director. An institute should also have an external advisory committee. The director of an institute should be a respected scientist with demonstrated organizational, managerial, and leadership ability. A committee of scientists from the participating institutions should provide an institute's scientific guidance. Although a multi-institutional consortium may be involved, a single entity must accept overall management

responsibility in dealing with NSF.

The NSF *Grant Proposal Guide (GPG)*, NSF 00-2, describes the format required for proposals. The Project Description in the full proposal will be subject to the page limitations **for each section** described below. Proposals not adhering to these limits will be returned without review.

- Detailed description of the intellectual focus and rationale for the institute, its overall goals, and expected impact (**3 pages, maximum**);
- Planned scientific activities, including a five-year plan for phasing activities in or out, and the roles of the various partners (**15 pages, maximum**);
- Plans for human resource development, including involvement of undergraduate, graduate and postdoctoral students and members of under-represented groups (**2 pages, maximum**);
- Description of planned outreach activities and dissemination (**2 pages, maximum**);
- Description of goals and outcomes expected and how the impact will be demonstrated and evaluated (**2 pages, maximum**);
- Description of the organizational structure of the institute, clearly outlining the proposed management structure, mechanisms for focusing institute activities, methods for selecting and integrating research emphases, criteria for selection of participants, allocating funds and equipment, and managing the involvement of other groups (**4 pages, maximum**).

Each biographical sketch, limited to two pages, should include a brief summary of results of prior NSF support. Please note that letters describing collaborative arrangements significant to the proposals should be included in "supplementary documentation." For collaborative activities involving DOE national laboratories, the value of DOE resources (facilities, equipment, personnel) that will be made available should be described in detail; arrangements for resources should be discussed with the appropriate DOE program manager before submission. Letters of collaboration should be scanned and uploaded as PDF files into the supplementary documenation form. "Endorsement" letters may **not** be included. No appendices are permitted.

Proposal Format for Collaborative Research Activities (CRAEMS)

CRAEMS proposals must conform to the formal requirements of the *Grant Proposal Guide (GPG)*, NSF 00-2, with three modifications.

- The project description is limited to ten pages of overall project description plus up to three pages per person of individual project description (including description of progress under prior NSF awards within the last five years). Thus, project descriptions for 3 investigators may reach a maximum of 19 pages; 4 investigators, 22 pages; and 5 investigators, 25 pages. If more than 5 principal investigators are involved, the group must submit the proposal as an EMSI in the format described immediately above.

- The collaborative research activity should be described and submitted in a single proposal, in which a single award is requested, with subawards administered by the lead institution to any other participating institutions. Budgets for each subawardee should be included and must be signed by the authorized organiziational representative of each subawardee.

- The project description should include a discussion of the management and education aspects of the project. The proposal should describe the roles to be played by the participating organizations, the responsibilities of the team leader and the activities of associated partners, and arrangements for networking, exchange, and dissemination of data and results. Details on the education and training activities planned as part of the project should be included. Opportunities for students to obtain novel research or educational experiences should be detailed, as well as descriptions of any specific training activities or workshops.

2. Cost Sharing Requirements

A one-to-one match of instrumentation costs in excess of $80,000 is required. In-kind contributions may not be used to fulfill this instrumentation match. The proposed cost sharing must be shown on line M on the proposal budget (NSF Form 1030).

The amount of cost sharing must be shown in the proposal in enough detail to allow NSF to determine its impact on the proposed project. Documentation of availability of cost sharing must be included in the proposal.

Only items that would be allowable under the applicable cost principles, if charged to the project, may be included as the grantee's contribution to cost sharing. Contributions may be made from any non-Federal source, including non-Federal grants or contracts, and may be cash or in-kind (see OMB Circular A-110, Section 23). It should be noted that contributions counted as costsharing toward projects of another Federal agency may not be counted towards meeting the specific cost-sharing requirements of the NSF grant.

All cost-sharing amounts are subject to audit. Failure to provide the level of cost-sharing reflected in the approved grant budget may result in termination of the NSF grant, disallowance of grant costs and/or refund of grant funds to NSF.

3. Proposal Due Dates

The proposal **MUST** be submitted via FastLane by 5:00 PM, local time, June 8, 2000.

A proposal may not be processed until the complete proposal (including the signed Cover Sheet) has been received by NSF. A proposal is considered "received" when the proposal, including the Project Description, has been submitted to NSF. The receipt date will be the date the sponsored projects office transmits the proposal to NSF.

Submission of Signed Cover Sheets. The signed copy of the proposal Cover Sheet (NSF Form 1207) must be postmarked (or contain a legible proof of mailing date assigned by the carrier) within five working days following proposal submission and be forwarded to the following address:

NSF 00-68
National Science Foundation
DIS-FastLane Cover Sheet
4201 Wilson Blvd.
Arlington, VA 22230

4. FastLane Requirements

Proposers are required to prepare and submit all proposals for this Program Announcement through the FastLane system. Detailed instructions for proposal preparation and submission via FastLane are available at: https://www.fastlane.nsf.gov/a1/newstan.htm.

Submission of Signed Cover Sheets. The signed copy of the proposal Cover Sheet (NSF Form 1207) must be postmarked (or contain a legible proof of mailing date assigned by the carrier) within five working days following proposal submission in accordance with the FastLane proposal preparation and submission instructions referenced above.

VI. PROPOSAL REVIEW INFORMATION

A. NSF Proposal Review Process.

Reviews of proposals submitted to NSF are solicited from peers with expertise in the substantive area of the proposed research or education project. These reviewers are selected by Program Officers charged with the oversight of the review process. NSF invites the proposer to suggest, at the time of submission, the names of appropriate or inappropriate reviewers. Care is taken to ensure that reviewers have no conflicts with the proposer. Special efforts are made to recruit reviewers from non-academic institutions, minority-serving institutions or adjacent disciplines to that principally addressed in the proposal.

Proposals will be reviewed against the following general merit review criteria established by the National Science Board. Following each criterion are potential considerations that the reviewer may employ in the evaluation. These are suggestions and not all will apply to any given proposal. Each reviewer will be asked to address only those that are relevant to the proposal and for which he/she is qualified to make judgments.

What is the intellectual merit of the proposed activity?

How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields? How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the quality of prior work.) To what extent does the proposed activity suggest and explore creative and original concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?

What are the broader impacts of the proposed activity?

How well does the activity advance discovery and understanding while promoting teaching, training, and learning? How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)? To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships? Will the results be disseminated broadly to enhance scientific and technological understanding? What may be the benefits of the proposed activity to society?

PIs should address the following elements in their proposal to provide reviewers with the information necessary to respond fully to both NSF merit review criteria. NSF staff will give these factors careful consideration in making funding decisions.

Integration of Research and Education

One of the principal strategies in support of NSF's goals is to foster integration of research and education through the programs, projects and activities it supports at academic and research institutions. These institutions provide abundant opportunities where individuals may concurrently assume responsibilities as researchers, educators, and students and where all can engage in joint efforts that infuse education with the excitement of discovery and enrich research through the diversity of learner perspectives.

Integrating Diversity into NSF Programs, Projects, and Activities

Broadening opportunities and enabling the participation of all citizens -- women and men, underrepresented minorities, and persons with disabilities – is essential to the health and vitality of science and engineering. NSF is committed to this principle of diversity and deems it central to the programs, projects, and activities it considers and supports.

Additional Criteria Specific to Proposals Submitted in Response to this Announcement

In addition to these generic review criteria, reviewers will be asked to use the following additional criteria when reviewing both EMSI and CRAEMS proposals: (1) potential for significant contributions to environmental chemistry; (2) strength of the collaborations planned; (3) value to education; (4) potential for national leadership among the constituency interested in the research theme; and (5) extent and effectiveness of industrial collaboration. For example, reviewers of EMSI proposals will be asked to consider the following additional criteria:

- Quality of the scientific activities and their potential for leadership and impact on environmental chemistry and solutions to environmental problems;
- Extent of interdisciplinarity and the extent to which communication and interaction with other areas of science and engineering are fostered by linkages and partnerships among university research groups, industry, national laboratories, *etc*.;
- Capabilities of the institute leadership, including managerial and organizational ability of the director and of the proposed leadership team;
- Quality and anticipated effectiveness of the management plan, including plans for interaction among institute staff and institutional partners and for operation of the institute, including selection of activities and participants;
- Quality of the institute's education and training components, especially plans to attract, involve and mentor students and under-represented groups;
- Quality and effectiveness of proposed outreach activities and dissemination of results;
- Clarity of mission and goals and quality of the evaluation plan;
- Quality and effectiveness of the commitment to the institute by the lead institution and its partners.

A summary rating and accompanying narrative will be completed and signed by each reviewer. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, excluding the names of the reviewers, are mailed to the Principal Investigator/Project Director by the Program Director. In addition, the proposer will receive an explanation of the decision to award or decline funding.

B. Review Protocol and Associated Customer Service Standard

All proposals are carefully reviewed by at least three other persons outside NSF who are experts in the particular field represented by the proposal. Proposals submitted in response to this announcement will be reviewed by a combination of panel and *ad hoc* review. In addition, site visits to finalists in the EMSI competition are anticipated.

Reviewers will be asked to formulate a recommendation to either support or decline each proposal. A program officer assigned to manage the proposal's review will consider the advice of reviewers and will formulate a recommendation. In most cases, proposers will be contacted by the program officer after a recommendation to award or decline funding has been approved by the division director. This informal notification is not a guarantee of an eventual award. NSF will be able to tell applicants whether their proposals have been declined or recommended for funding within six months for 75 percent of proposals. The time interval begins on the proposal deadline date. The interval ends when the division director accepts the program officer's recommendation.

In all cases, after programmatic approval has been obtained, the proposals recommended for funding will be forwarded to the Division of Grants and Agreements for review of business, financial, and policy implications and the processing and issuance of a grant or other agreement. Proposers are cautioned that only a Grants Officer may make commitments, obligations or awards on behalf of NSF or authorize the expenditure of funds. No commitment on the part of NSF should be inferred from technical or budgetary discussions with an NSF Program Officer. A principal investigator or organization that makes financial or personnel commitments in the absence of a grant or cooperative agreement signed by the NSF Grants Officer does so at its own risk.

VII. AWARD ADMINISTRATION INFORMATION

A. Notification of the Award

Notification of the award is made ***to the submitting organization*** by a Grants Officer in the Division of Grants and Agreements (DGA). Organizations whose proposals are declined will be advised as promptly as possible by the cognizant NSF Program Division administering the program. Verbatim copies of reviews, not including the identity of the reviewer, will be provided to the Principal Investigator.

B. Grant Award Conditions

An NSF grant consists of: (1) the award letter, which includes any special provisions applicable to the grant and any numbered amendments thereto; (2) the budget, which indicates the amounts, by categories of expense, on which NSF has based its support (or otherwise communicates any specific approvals or disapprovals of proposed expenditures); (3) the proposal referenced in the award letter; (4) the applicable grant conditions, such as Grant General Conditions (NSF GC-1)* or Federal Demonstration Partnership Phase III (FDP) Terms and Conditions* and (5) this announcement, specifying reporting requirements through meetings of awardees and site visits. If intellectual property is involved, an agreement among university and industrial partners must be in place. Cooperative agreement awards also are administered in accordance with NSF Cooperative Agreement Terms and Conditions (CA-1). Electronic mail notification is the preferred way to transmit NSF grants to organizations that have electronic mail capabilities and have requested such notification from the Division of Grants and Agreements.

* These documents may be accessed electronically on NSF's Web site at: <http://www.nsf.gov/>. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone 301.947.2722 or by e-mail from pubs@nsf.gov.

More comprehensive information on NSF Award Conditions is contained in the NSF *Grant Policy Manual* (GPM) Chapter II, (NSF 95-26) available electronically on the NSF Web site. The GPM also is available in paper copy by subscription from the Superintendent of Documents, Government Printing Office (GPO), Washington, DC 20402. The GPM may be ordered through the GPO Web site at: http://www.gpo.gov. The telephone number at GPO for subscription information is 202.512.1800.

C. Reporting Requirements

For all multi-year grants (including both standard and continuing grants), the PI must submit an annual project report to the cognizant Program Officer at least 90 days before the end of the current budget period.

For this competition, it is expected that all successful PIs will be required to attend periodic (approximately every two years, during the tenure of the award) meetings of awardees or workshops at dates and places to be specified by NSF. Institutes (EMSIs) should plan for a formal site visit by NSF at the midpoint of an award.

Within 90 days after expiration of a grant, the PI also is required to submit a final project report. Approximately 30 days before expiration, NSF will send a notice to remind the PI of the requirement to file the final project report. Failure to provide final technical reports delays NSF review and processing of pending proposals for that PI. PIs should examine the formats of the required reports in advance to assure availability of required data.

NSF has implemented an electronic project reporting system, available through FastLane. This system permits electronic submission and updating of project reports, including information on: project participants (individual and organizational); activities and findings; publications; and other specific products and contributions. PIs will not be required to re-enter information previously provided, either with a proposal or in earlier updates using the electronic system.

VIII. CONTACTS FOR ADDITIONAL INFORMATION

General inquiries should be made to the **Special Projects Program,** Dr. Margaret A. Cavanaugh, Program Officer, Room 1055, Division of Chemistry, National Science Foundation, Arlington, VA 22230, telephone 703.306.1842, e-mail: mcavanau@nsf.gov. For questions related to the use of FastLane, contact Paul Spyropoulos, 703.306.1022, chefl@nsf.gov.

IX. OTHER PROGRAMS OF INTEREST

The NSF Guide to Programs is a compilation of funding for research and education in science, mathematics, and engineering. General descriptions of NSF programs, research areas, and eligibility information for proposal submission are provided in each chapter. Many NSF programs offer announcements concerning specific proposal requirements. To obtain additional information about these requirements, contact the appropriate NSF program offices listed in Appendix A of the GPG. Any changes in NSF's fiscal year programs occurring after press time for the Guide to Programs will be announced in the NSF Bulletin, available monthly (except July and August), and in individual program announcements. The Bulletin is available electronically via the NSF Web Site at http://www.nsf.gov. The direct URL for recent issues of the Bulletin is http://www.nsf.gov/od/lpa/news/publicat/bulletin/bulletin.htm. Subscribers can also sign up for NSF's Custom News Service to find out what funding opportunities are available.

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PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

The information requested on proposal forms and project reports is solicited under the authority of the National Science Foundation Act of 1950, as amended. The information on proposal forms will be used in connection with the selection of qualified proposals; project reports submitted by awardees will be used for program evaluation and reporting within the Executive Branch and to Congress. The information requested may be disclosed to qualified reviewers and staff assistants as part of the review process; to applicant institutions/grantees to provide or obtain data regarding the proposal review process, award decisions, or the administration of awards; to government

contractors, experts, volunteers and researchers and educators as necessary to complete assigned work; to other government agencies needing information as part of the review process or in order to coordinate programs; and to another Federal agency, court or party in a court or Federal administrative proceeding if the government is a party. Information about Principal Investigators may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See Systems of Records, NSF-50, "Principal Investigator/Proposal File and Associated Records," 63 Federal Register 267 (January 5, 1998), and NSF-51, "Reviewer/Proposal File and Associated Records," 63 Federal Register 268 (January 5, 1998). Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of receiving an award.

Pursuant to 5 CFR 1320.5(b), an agency may not conduct or sponsor, and a person is not required to respond to an information collection unless it displays a valid OMB control number. The OMB control number for this collection is 3145-0058. Public reporting burden for this collection of information is estimated to average 120 hours per response, including the time for reviewing instructions. Send comments regarding this burden estimate and any other aspect of this collection of information, including suggestions for reducing this burden, to: Suzanne Plimpton, Reports Clearance Officer, Information Dissemination Branch, Division of Administrative Services, National Science Foundation, Arlington, VA 22230, or to Office of Information and Regulatory Affairs of OMB, Attention: Desk Officer for National Science Foundation (3145-0058), 725 – 17th Street, N.W. Room 10235, Washington, D.C. 20503.

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